5: Schwimmer E-4,5 (1966-1967) 1973
OJ23 Orokaiva OJ23
Mountain Orokaiva

making salt were described to me, the housewife depends mainly on trade salt. Meals never consist of more than one course. Plates, forks and spoons are owned by all households but people do not always use them. While boiling is the most common way of preparing food, bananas, yams and breadfruit are usually roasted. Meat is often preserved by daily smoking, sometimes for long periods. There is a rule against eating meat 'in lent' and this is kept very strictly, but probably for traditional religious reasons to be discussed later. The main drink with meals is a soup consisting of the water in which the vegetables and herbs were cooked.

Foraging. A good deal of plant and animal food is obtained from foraging, especially in the tropical rain forest which covers most of the Northern District. Among foraged animal foods I would mention especially grubs, frogs, snails, rats, bush eggs and lice. Foraged plant foods are especially valued during the dry season when roots, leaves and fern fronds may make up part of a meal. Savoury herbs and leaves, however, are collected at all times of the year. Some food plants, though growing in the forest, are owned by individuals so that the gathering of these plants may be better described as harvesting than collecting. The most important are the *tauga* and *puga* nut, sago, breadfruit, wild fig, and fruiting pandanus.[4]

Hunting. According to Waddell and Krinks, about two man-hours weekly are spent on hunting (3.7 hours by men and 0.3 hours by women). Hunting patterns on the Mount Lamington foothills differ widely from those on the alluvial plains where kunai grass is widespread. On the foothills, there is hunting in reverted gardens and in very limited areas of virgin bush. The usual quarry consists of small marsupials and birds. If a pig is encountered, it is invariably a village pig whose owner has a claim to the carcase. The game population was virtually exterminated after the introduction of guns in the 1950s. In the kunai country, on the other hand, hunting land is abundant. The technique is by firing the kunai so that the animals can be shot when they escape. Such a hunt requires a large number of men who ring the burnt-over area. Not only marsupials but also pigs are killed, either by gunfire or by being roasted alive in the kunai grass. By no means all animals killed in the fire are retrieved. Fires tend to get out of hand and to spread over surrounding bush land which then is often covered with kunai grass and so is useless for purposes of cultivation.

Fishing. The supply of fish has suffered greatly with the introduction of snorkels after the Second World War, as this equipment enabled the Orokaiva to fish out their rivers almost completely in a very short time. Fish is still an important resource, however, in the lower reaches of the huge rivers which run through the Northern District: Kumusi, Ambogo, Girua, Sambogo, etc. In Inonda, the village studied by Crocombe and Hogbin (1963) and Waddell and Krinks (1968), 3.8 man hours per week are spent on fishing, mostly with spears, and the product is used not only for consumption but also for trade. (Inonda people also trade meat and bush eggs.) Many of the villages near the mountain, such as Sivepe, have very little fish. Apart from a few eels and crabs, the rivers contained a small supply of two-inch-long fishes caught in April with a small hand-net used as a scoop. (See Williams 1930:53 for description.)

Animal Husbandry. There are three kinds of domestic livestock: pigs, dogs and fowls. Every man still has one or more small dog which he uses for hunting

5: Schwimmer E-4,5 (1966-1967) 1973
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222 4 Orokaiva: *tauga*; botanical: *cycas media*; Orokaiva: *puga*; botanical: *terminalia okaria*. There are two varieties of breadfruit, called *oga* and *eumba*. They are both somewhat unusual but I failed, in spite of sending samples, to obtain indentifications.

241 5 Details of garden production are given in Table II/3. Rainfall at Sivepe and Inonda is shown in Rimoldi 1966:109; Crocombe and Hogbin 1963:100.

342 6 A plan of a contemporary Orokaiva house is shown in Fig. 3. Recent changes in house design, house construction and domestic amenities are summarised in Table II/4.

462 7 See Tables II/5 and II/6. Williams' data are taken from an unpublished manuscript and appeared first in Schwimmer 1969:226. I have discussed the Orokaiva division of labour in more detail in Schwimmer 1969: 145–50 and explained the apparent discrepancies between Williams' table and Waddell's and Krinks' statistics.

439 437 8 Crocombe and Hogbin (1963) provide a list of prices prevailing in this trade. They report that there is still some trade in shell ornaments from the coast and in feathers for head dresses from the mountains. Informants at Eroro, on the coast near Buna, gave me details of their traditional trade with Managalasi of the nearby mountains. A Sivepe man who has hunting rights to land near Ajoro goes there to hunt birds and sell the feathers. His chances of finding any of the more valuable birds near Sivepe are remote. The difference in Sivepe and Inonda patterns (i.e. the foothills and the alluvial plains) appears from the data in Table II/7. It will be seen that Sivepe stock is to a far greater extent inherited, whereas Inonda stock is to a far greater extent acquired through brideprice (value $13), barter (value $21.60) and other exchanges (value $13.70).

439 438 437 9 Dr. Waddell has provided a detailed statistical table of the geographical distribution of subsistence produce (Waddell and Krinks 1968:218). This table provides clear and detailed information on the geographical range of the Sivepe exchange network. A full descriptive account may be found in Schwimmer 1969: 41–69.

648 10 An interesting picture of this period of Orokaiva history is drawn in Beaver, 1916.

795 11 Full information on these cults will be found in Chinnery and Haddon (1917) and Williams (1928). If has escaped previous commentators that Bia, who started the taro cult, was employed for some years by Monckton, and participated in various punitive enterprises with an alacrity most pleasing to his master. He was described in Monckton's books in rather revealing detail (e.g. 1921: 185, 268, 269, 295, 308; 1922: 10, 13, 65, 136, 172, 214, 216). For the present relationship between the Orokaiva and the missions, see Schwimmer 1969; 123–33.

871 872 797 657 648 12 The general subject of Orokaiva economic development since 1951 is very fully covered in numerous bulletins published by the New Guinea Research Unit from 1963 to the present, and also in Schwimmer 1969. A general indication of the investments in socio-economic development is given by a table of public expenditure in the territory of Papua for the years ended 30 June 1961 to 1965 (Commonwealth of Australia: *Annual Report of the Territory of Papua for the period 1 July 1964 to 30 June 1965*, 179). The growing emphasis on educational services is perhaps the most notable aspect. Table II/8 indicates the pattern of school attendance. Table II/9 summarises the activities of the Higaturu Local Government Council; roads, water supplies and clinics are perhaps the projects most relevant to development.

101 13 The three villages have been sketched in figures 4, 5 and 6. Education and occupational experience at Sivepe and Hohorita are analysed in Tables II/10 and II/11.

244 Breadfruit trees grow around the village and in garden areas, some being planted and others self-sown but preserved when garden sites are cleared. All are individually owned. Harvesting is relatively easy, the fruit being removed from the tree with the [262] aid of a knife attached to a long stick. Sago apart, the breadfruit comprises a major element of diet during the dry months.

433 While the inland Orokaiva are essentially food-gardeners - a [224] fact dictated largely by the density of occupation where intensive utilisation of the forest has greatly reduced its plant and animal [512] resources - both hunting and sago-making are of limited importance and occupy 1.8 and 0.4 hours per man-week respectively.

224 Traditionally the Sivepe people claim to have hunted feral pig [136] high on the slopes of Mt Lamington but this has ceased now they 'have too much to do'. No such pigs are found in the bush adjacent to the village but bandicoot, wallaby, cus-cus, flying fox, and a variety of birds are not uncommon. Periodically domestic pigs [411] enter gardens whereupon they are usually hunted out and killed, either by the irate gardener or the owner of the animal. While a spear may be used in the latter case, shotguns are now often used or special hunting parties organised where a net is employed. Use of the two shotguns held in the village is usually confined to the owner and others who contributed to its purchase. Such hunting, with the aid of a torch, is normally done on moonlit nights and is most common in the dry season when flying fox are attracted to the ripe breadfruit.

[512] During the survey, however, most hunting was done during period III when 4.8 hours per man-week were recorded, the avowed object being to 'stockpile' smoked meat for the annual Christmas feast held on Sasembata mission station. Large intra- and inter-village group drives were organised daily for two weeks, the activities being initiated by the priest blessing the dogs. Wallabies were the principal animals caught. During both weeks time spent hunting exceeded 11 hours per man-week, or more than that devoted to taro gardening. These drives were facilitated by a spell of unusually dry weather.

322 252 Sago-making is a highly seasonal activity. In Sivepe, production [22] is confined primarily to the dry season when 1.5 hours per man-week [512] were spent on it, rising to 6.4 hours in week 16 when only taro gardening, among subsistence activities, was of greater importance. [461] The work is arduous and is only undertaken with reluctance as the flour must be produced as quickly as possible following the felling of the tree. It is one of the few activities not interrupted by heavy rain.

[461] Because of the very high labour requirements, sago-making is essentially a group enterprise and, not being popular, is only commenced when a number of families have little producing food in their

[TEXT CONTINUED ON PAGE 87]

8: Waddell & Krinks E-4,5 (1964-1965) 1968 OJ23 Orokaiva OJ23

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Plate 3. Sago-making - possibly the most arduous of subsistence tasks and invariably a group enterprise.

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Plate 4. Sivepe - women are responsible for keeping the central area free from weeds and refuse, as part of 'Council work'.

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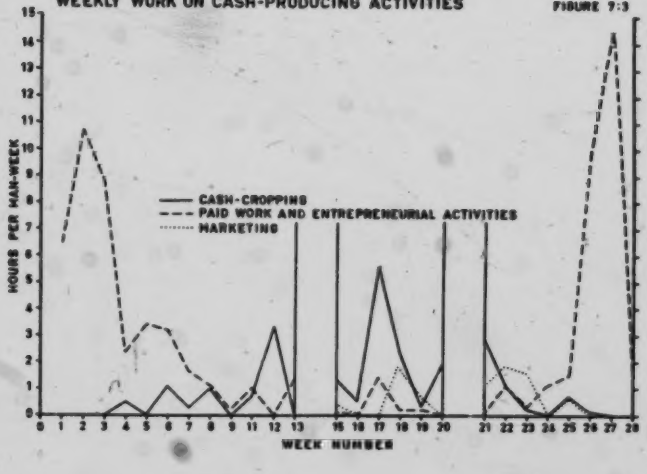
INONDA
WEEKLY WORK ON CASH-PRODUCING ACTIVITIES FIGURE 7:3



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The gathering of forest plants receives more attention during the dry season to compensate for lower garden production. The increased dietary significance of such plants at this time is, perhaps, understated in Table 7:3, since women often collect green leaves beside paths while walking to or from other activities and such gathering may not be recorded. In addition, a considerable amount is gathered by children. Hunting also increases during the dry season, with the increased number of wild pigs. However, a significant factor in 1964 was the acquisition of a shotgun in July by the leading man (with financial assistance from others, who thereby acquired rights of use). From this time, hunting to obtain meat for both food and marketing increased, becoming most popular during period III when marketing also was most frequent. Due to the drop in water levels, the time devoted to fishing during the dry season is much less than in the rest of the year, but over the year as a whole, more time is spent in it than in any other single activity.

8: Waddell & Krinks E-4,5 (1964-1965) 1968 OJ23 Orokaiva OJ23

433 184 [24] [222] population in the two villages, it is estimated that the total land requirements per person in Sivepe are therefore only 2.5 acres compared with 14.8 acres in Inonda.[1] Given the lack of uniformity in the hinterland of a village which is located at the forest-grassland boundary, where subsistence is primarily derived from the forest and where garden land requirements are high, it is to be expected that travelling times would be higher for Inonda and that the economy should be diversified by using the non-cultivated areas. There are abundant sago palms in the swamps fringing the rivers and, in the absence of breadfruit (numerous in the cultivated areas at Sivepe), these are exploited in the dry season to compensate for the scarcity of garden foods. In fact, Inonda experiences both a drier and more distinctly seasonal climate and this, together with the greater abundance of land, accounts for the greater significance of supplementary food producing activities. Only hunting is practised to much the same degree in the two villages.

461 The transfer of Inonda to a new site did not lead to the expenditure of substantially more time on construction than in Sivepe, where the normal rhythm of repair and rebuilding was in operation. Since it is estimated that in Sivepe 0.7 of the 1.6 hours per man-week spent on construction are restricted to repairs and minor extensions to existing houses it seems that in Inonda, with the transfer in village site, such maintenance work ceased and the labour time so made available was directed entirely to constructing new houses. In effect, therefore, such moves are not as time-consuming as might be expected.

[m] The external sector of the economy absorbs 26 per cent of total activity time in Sivepe and 23 per cent in Inonda, but in both cases only about one-third of this is directed towards cash production. Rather more time is spent in dealings with the external agencies, particularly in Sivepe by virtue of its proximity to a mission station and location in a densely populated area which is more frequently the focus of Administration and commercial interests.

433 184 In Inonda paid work is considerably more important than cash cropping, but it is essentially of a casual and temporary nature

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[1] The estimation of land requirements is derived from the following formula (adapted from Allan 1949):

$$100\,\frac{CL}{P}$$

where:

P = percentage of the group territory that is arable under the given technology.
C = number of annual garden areas utilised in the agricultural cycle of cultivation and regeneration.
L = acreage of cultivated land per head of population per annum.

8: Waddell & Krinks E-4,5 (1964-1965) 1968 QJ23 Orokaiva QJ23

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The exchange of labour services

Table 11:15 presents the detailed composition of labour services given and received by the Inonda people. These services have been discussed in general,[1] particularly with reference to their seasonality. It is worth emphasising here the comparatively small extent of mutual collaboration in work. With some 17,000 working hours available (on the arbitrary basis of 6 man-hours for each of the 2,782 man-days on which exchange data were collected), less than 450 hours were actually spent in assisting others, either in or outside the village, although a few more hours were spent working together in communal tasks such as building the copra drier and chapel.

As was pointed out, 46 per cent of the acquisitions of labour assistance in subsistence tasks is in sago-making. There are two [222] main reasons for this. Firstly, it requires several days of intensive and exhausting labour in order to beat the starchy pith from the felled trunk before it spoils in the hot, moist climate and before wild pigs can get at the opened trunk at night. Secondly, a single tree provides enough food (supplemented by garden produce) to support several families for some weeks and the produce of a single tree is distributed by the rightholder(s) particularly to [462] those who assist in its preparation. Due to the exhausting nature of the task, men provide the bulk of the assistance. There is no clear pattern of kinship groups operating: assistance may be requested and received from the immediate family or from among patrilateral, matrilateral and affinal kin. Assistance received in sago-making exceeds disposals by 93.4 hours, reflecting an inflow from other villages. This was received mostly from two young Sewa men, who also contributed over one-third of the total assistance received in house construction.

Tasks involved in the construction of houses account for about 10 per cent of disposals and 15 per cent of acquisitions of all subsistence services. This is undoubtedly higher than it would otherwise be owing to the reconstruction of the village. Even so, the amount of assistance given in the process of re-building is probably understated, as much occurred outside the recording periods. The bulk of the construction services fell into periods [342] I and II and the move was completed by the beginning of period III. One-third of the assistance in construction was in making roof-[824] sheets from sago leaves.

About one-quarter of both acquisitions and disposals of subsistence services is in garden tasks - mainly fencing, clearing and planting taro. In most of these there is an excess of acquisitions,

[1] See pp.235-44.

224 Snares and traps are set at strategic points to catch wild pigs. A snare consists of a wire noose attached to a sapling which is fastened under tension to a triggering device. Snares are usually concealed along paths in abandoned gardens. The traps are of two types: the pit-trap which is dug two to three feet deep along a path or near a hole in a fence and has old spear heads and sharpened hardwood stakes "planted" in the floor; and the jump-trap which consists of hardwood spikes set at an angle in the ground with the points facing a low "gate" in the fence, so that a pig which jumps the "gate" impales itself on the spikes.

226 There is some fishing in the local rivers throughout the year, but most fish are caught during the dry season when the rivers are low and the water is clear, and spearing is then 222 easy and profitable. The people forage for firewood, wild yams, bush cabbage, honey and other foods. Although these products may make an important contribution to diet, they seem to provide only a small proportion of the total volume of food consumed.

131 Boundaries: The external boundaries of the Inonda lands are known in detail where they follow or cross the Sambogo and Girua rivers, and where they cut the main road. Elsewhere the people recognize only general boundaries which follow hill-tops or other natural features. Within Inonda the Girua and Sambogo rivers and their tributary creeks form the most important boundaries and each area of land is known by some physical feature, frequently the name of the adjacent creek. On the southern side the land extends back into the mountains in some cases to include the whole watershed of the creeks which feed the Sambogo, and in others to meet the boundaries of the Mosou and Tandai'undi lands.

241 Each of the lands framed by the creeks is divided between the lineages. Boundaries are marked by trees (es- 422 pecially hauga and poponda) and other natural features. The gardens of different families and of different individuals within families are marked, sometimes by rows of crotons, but more usually by continuous lines of dead saplings laid end to end between trees or stumps. Individual gardens are not named but are referred to by the name of the person who plants them.

423 241 245 miles away and another to collect betel nut about fifteen miles away.(1)

The rights of females who marry outside the village vary according to distance, frequency of contact with the home village and adequacy of supplies of that tree in the locality where they reside. It is said that a widow can return to her village of origin and resume rights which had been exercised by her brothers since her absence. We found no instances of females who live in or originate from this village having exclusive rights to any tree, either in this village or any other, though instances do occur of trees being given by a woman's brother or father to her children.

222 [262] Unlike in other parts of the Orokaiva country sago does not grow wild in Inonda though some wild sago is collected by Inonda people from other lands in which they hold rights. Sago is eaten mainly in the latter part of the dry season when other foods are short, or at other times when large quantities of food are needed for funerary or other feasts. What people refer to as 'a tree' is frequently a clump of trees in various stages of growth, but all of which have originated from a single plant.

423 241 245 A total of 21 sago trees was accounted for on Inonda lands, but the bulk of sago supplies is obtained from outside the area. Four Inonda people claimed five trees at Sambogo, where their forefathers had lived before shifting to Inonda. All Inonda people claim rights to wild sago growing at Aramba, the "original" home of the Andiriha and Jego'undi clans, and some of them have made sago there in recent years. The Inonda people claim the right, along with other branches of their clans, to use whatever trees they need. People from this village also make sago from wild trees bordering the Embi

(1) Sago is difficult to prepare and heavy to carry and is usually obtained from the closest possible source, even if this means making arrangements with persons to whom one is not closely related. Betel nut, on the other hand, is light, and it is easier to go a longer distance and obtain it from some close relative than it is to get it closer if that would necessitate contracting obligations with more distant kin.

	Men	Women	Average
Hunting, fishing and foraging: Taken as 25% below pilot survey (as hunting increased during mourning and fishing increased during dry season; foraging not fully accounted for as often done in the course of other activities). Hunting all by men, fishing mostly by men, foraging mostly by women	30	8	19
Housebuilding: House rebuilt about every 4 years. Assuming that it takes about 16 man-days to build a house.	4	-	2
Total subsistence activities:	74	132	103
Cash cropping: Assessed time needed to maintain and harvest area planted (1.85 acres) averaged over all adults.	6	6	6
Council work: Road work say 4 days per man per year.	4	-	2
Church: Services 2 hours per week, plus church celebrations 2 days per year.	17	17	17
Sickness (including caring for the sick): Based on survey period.	23	29	26
Paid work: Based on actual paid work undertaken so far this year.	72	-	36
Total other activities:	122	52	87
Social obligations			
Death: Based on 2 deaths per year in this village, each involving the equivalent of 10 days absence from productive activities; and 5 deaths elsewhere which concern Inonda people involving 3 days each.	35	35	35

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[Housewife carrying garden produce and firewood back to her village, a distance of up to four miles. Her load, excluding baby, is about 100 pounds.]

INTRODUCTION

433 THE traditional economy of New Guinea villages was radically different from our own. Whilst our economy is based upon the production of surplus goods which can be sold for profit, thus providing capital which in turn may be invested to produce greater profits, the key note of the New Guinea economy was 433 self-sufficiency. Traditionally, the people of 24 New Guinea were subsistence cultivators plant- [226] ing their food crops in small clearings in the [224] forests and supplementing this food supply by [222] fishing, by hunting the animals which live in the forests and on the grasslands and by gather- ing the edible produce of wild vegetation, notably sago. Only the simplest implements [412] were available: stone axes with which trees could be laboriously felled or ring-barked; [392] fire for burning-off the mass of felled timber, vines, and leaves; and sharpened sticks with which holes were made for planting seeds and cuttings. In only a few limited areas, notably the central highlands of the main island, was there any attempt at digging or cultivating the soil prior to planting; in most areas cuttings or seeds were planted in holes made directly in the cleared, ash-covered ground. [128] The burned clearing thus made and used for the growing of food crops is referred to in this book as a swidden.

433 Such an economy, in which there was no 24 concept of saving and no profit motive, tended 171 to be resistant to change; innovation was unnecessary. But with the coming of white men [412] possessing a superior technology, an important change occurred; steel axes, knives, and spades

P.1-A

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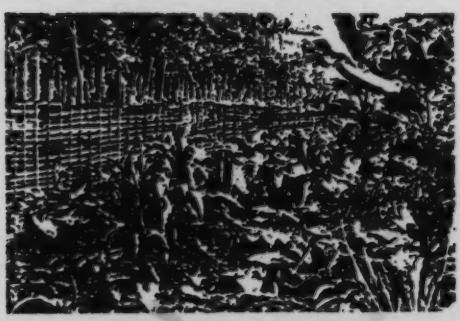

Fig. 6. *A Yega swidden. Notice the variety of interplanted crops which here include maize, taro, sugar cane, pineapple, paw paw, and bananas. The fence, built to keep out wild pigs, is about five feet high*

241 b) *Fencing.* Most Yega swiddens are fenced, at least partly, against the depredations of wild pigs (Fig. 6). Since fencing is a tedious task, natural features such as steep creek banks are utilized as fully as possible. But frequently one finds a swidden entirely fenced except for a gap left purposely to tempt the pig to enter [224] the garden. A trap is then set, or a hunter takes his stand nearby at night. When the gap is [825] not being used for hunting purposes, a fire is lit or pieces of rag are hung there; pigs scenting human beings will not then enter the garden.

241 c) *Division of labour.* Most garden work is performed by both men and women, but cut- 462 ting large trees is men's work only, and harvesting is performed by women only. Incidentally, [482] the women also carry the loads of vegetables weighing sixty to seventy pounds back to the villages, often three or four miles, sometimes with a load of firewood and a baby on top.

262 d) *Sago production.* Sago is an important supplementary food; it is particularly important as a famine reserve. During an unusually long dry period in 1965 the Yega and their neighbours were reduced to living, for some months, almost exclusively on sago. Production 222 is a tedious process. Sago is a starch which, with fibre, makes up the internal bulk of the

[P.9-B)

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Fig. 7. The New Guinea gardener's work tools, an axe, and large bush knife. The strong heavy spear is carried just in case he should see a wild pig. The cigarette, rolled with newspaper, is almost indispensable to most New Guineans [276]

trunk of the sago palm which grows in wet or swampy ground. The sago is extracted by first cutting down the palm, then pounding up the fibre and washing out the starch. This passes through a coconut fibre screen into a settling tank. Four people can make 100 pounds of sago a day. 222 252 [461]

e) *Grass fires.* The origin and extension of tropical grasslands has long been a matter of debate. Large areas of grassland occur in Yega territory where villagers regard them as practically useless. Grasslands are extended by fire but only in special circumstances. Grassland fires seldom penetrate or destroy an area of mature rain forest or even areas of well-developed secondary growth. The danger period is the first two years after a swidden is abandoned. At this time there is a large quantity of grass and undergrowth amongst the young trees. If a fire spreads from adjacent grasslands to this highly inflammable material the young trees are destroyed. Being immature, they have not yet seeded and further forest regrowth is prevented. This circumstance is most likely to occur on the south-west margins of grassland areas where strong north-easterly 372

[P.10-A]

311 products, such as slow-growing trees, which are used for house
423 posts, drums, and other artifacts. A great deal of Sivepa land is in young bush but this is fallowed garden land. After eight years or so, it grows sizeable trees, and sometimes it is fallowed for much longer. In this bush, many trees may be found that have actually been planted by man and are owned by individuals. Prominent among these are breadfruit, various nut trees, fruit trees and trees with other specific uses. Some of these are
224 deliberately planted in bush. People go to the bush to collect these, to forage and to hunt. Although hunting expeditions do
[222] occur periodically, and cause much excitement, they yield very
[136] little meat. Not only is the area too small to contain much game, but also it appears that very few birds and no game apart from
[411] small marsupials are actually still left. The same is true for the rivers which contain very little fish. I could not help wondering, in fact, whether the meat collected was an adequate
[262] return for the number of cartridges used to kill it. Hunting expeditions occurred only when there was a feast, and when the offering of fresh meat to guests was especially desirable. (Tinned meat might be cheaper than the cartridges but much less esteemed.)

311 In this respect, the situation was very different in Inonda where only a fraction of the land was used for gardening so that almost all of it was hunting land. Most of this was in kunai grass, which was very often burnt over. The effect of these burnings was very often that good garden land also fell a victim to fire,
224 valuable trees were destroyed and villages endangered. The yield
223 in meat was much higher, however, so that in Inonda, meat actually became an economic resource: it was sold on the market and used as gifts in return for feathers and other valuables. There are more birds at Inonda than at Sivepa, more marsupials and also a good chance of an occasional wild pig. Neither at Sivepa nor at Inonda is there evidence today of the use of traditional hunting techniques, though traditional fishing techniques have survived.
[411] The decline in game and fish population is ascribed to the intro-
[293] duction of guns and snorkels which greatly increased yields for some years, but then led to a greater scarcity than had ever been
[199] known in the past. Guns and snorkels were introduced shortly after the second world war.

There are two kinds of domestic livestock: pigs and fowls.
231 The number of pigs has, as I already pointed out, declined greatly in both villages. It was impossible to know how many pigs were owned by Sivepa people in 1966-67, because they disappeared as the old village became deserted and were never seen at all in the new village. Rimoldi reports 24 pigs owned by his sample of 70 Sivepa people alone which suggests that even in 1963, when he stayed there, the whole village must have owned at least 60. During my period of study, only a few of them were killed, and only when